CLAIMS

What is claimed is:

1. A method for managing leased network addresses for a plurality of networks using overlapping address spaces, the method comprising the computer-implemented steps of:

    storing a plurality of banks of addresses corresponding to the plurality of networks, wherein at least one particular set of one or more network addresses is included in more than one bank of the plurality of banks;

    receiving a request for a network address for a host on a first network of the plurality of networks from a relay agent on an intermediate device connected to the first network, the request including a qualifier associated with the first network by the relay agent;

    based on the qualifier, selecting a first bank of addresses from the plurality of banks;

    identifying a first network address from the first bank of addresses based at least in part on the request; and

    sending to the relay agent a response for the host, the response indicating the first network address and the qualifier.

2. A method as recited in Claim 1, wherein said step of storing the plurality of banks further comprises the step of storing data indicating a value for the qualifier in association with each bank of the plurality of banks.

3. A method as recited in Claim 1, wherein the qualifier further includes a segment identifier of a segment of the first network.

4. A method as recited in Claim 3, wherein said step of identifying the first network address from the first bank is further based on the segment identifier.

5. A method as recited in Claim 1, wherein the request is formatted according to a dynamic host configuration protocol (DHCP)

6. A method as recited in Claim 5, wherein the qualifier is included in the request in a set of optional fields associated with the relay-agent in the DHCP.

7. A method as recited in Claim 1, said step of sending the response further comprising the step of formatting the response according to a dynamic host configuration protocol (DHCP).

8. A method as recited in Claim 7, wherein the qualifier is included in the response in a set of optional fields associated with the relay-agent in the DHCP.

9. A method as recited in Claim 1, wherein:
the request is to lease a new network address for the host; and
said step of identifying the first network address comprises selecting the first network address from a pool of available network addresses in the first bank.

10. A method as recited in Claim 1, wherein:
the request involves an already leased network address for the host; and
said step of identifying the first network address comprises retrieving the first network address from a data structure of leased network addresses in the first bank.

11. A method for managing leased network addresses for a plurality of networks using overlapping address spaces, the method comprising the computer-implemented steps of:
receiving, at a relay agent executing on an intermediate device connected to a first network of the plurality of networks, a first request for a network address from a host on the first network;
associating a particular qualifier with the first network; and
sending to a configuration server a second request for a network address for the host, the second request including the particular qualifier.

12. A method as recited in Claim 11, wherein:
the intermediate device includes a plurality of interfaces connected to one or more segments of one or more networks of the plurality of networks;
the method further comprises the step of storing a plurality of qualifiers corresponding to the plurality of interfaces, each qualifier uniquely identifying one network of the plurality of networks; and
said step of associating the particular qualifier with the first network further comprises the step of retrieving the particular qualifier corresponding to a particular interface connected to the host.

13. A method as recited in Claim 12, wherein each qualifier includes a segment identifier uniquely identifying a segment of a network of the plurality of networks, the segment connected to a corresponding interface of the plurality of interfaces.

14. A method as recited in Claim 11, wherein:
the host is on a particular segment of the first network;
the particular segment is connected to a particular interface of the intermediate device; and
the particular qualifier includes a segment identifier for the particular segment.

15. A method as recited in Claim 11, wherein the first request is formatted according to a dynamic host configuration protocol (DHCP)

16. A method as recited in Claim 11, said step of sending the second request further comprising the step of formatting the second request according to a dynamic host configuration protocol (DHCP).

17. A method as recited in Claim 16, wherein the qualifier is included in the second request in a set of optional fields associated with the relay-agent in the DHCP.

18. A method as recited in Claim 11, further comprising the steps of:
in response to sending the second request, receiving from the configuration server a first response, the first response indicating the particular qualifier and a particular network address for the host;
determining that the particular qualifier is associated with the first network; and
sending a second response to the host on the first network, the second response including the particular network address.

19. A method as recited in Claim 18, wherein the second response does not include the qualifier.

20. A method as recited in Claim 18, wherein the first response is formatted according to a dynamic host configuration protocol (DHCP)

21. A method as recited in Claim 20, wherein the qualifier is included in the first response in a set of optional fields associated with the relay-agent in the DHCP.

22. A method as recited in Claim 18, wherein:
the host is on a particular segment of the first network;
the particular segment is connected to a particular interface of the intermediate device; and
the particular qualifier includes a segment identifier for the particular segment.

23. A method as recited in Claim 22 wherein:
said step of determining that the particular qualifier is associated with the first network further comprises determining that the segment identifier is associated with the particular interface; and
said step of sending the second response to the host comprises sending the second response through the particular interface.

24. A computer-readable medium carrying one or more sequences of instructions for managing leased network addresses for a plurality of networks using overlapping address spaces, which instructions, when executed by one or more processors, cause the one or more processors to carry out the steps of:

storing a plurality of banks of addresses corresponding to the plurality of networks, wherein at least one particular set of one or more network addresses is included in more than one bank of the plurality of banks;

receiving a request for a network address for a host on a first network of the plurality of networks from a relay agent on an intermediate device connected to the first network, the request including a qualifier associated with the first network by the relay agent;

based on the qualifier, selecting a first bank of addresses from the plurality of banks;

identifying a first network address from the first bank of addresses based at least in part on the request; and

sending to the relay agent a response for the host, the response indicating the first network address and the qualifier.

25. A computer-readable medium carrying one or more sequences of instructions for managing leased network addresses for a plurality of networks using overlapping address spaces, which instructions, when executed by one or more processors, cause the one or more processors to carry out the steps of:

receiving, at a relay agent executing on an intermediate device connected to a first network of the plurality of networks, a first request for a network address from a host on the first network;

associating a particular qualifier with the first network; and

sending to a configuration server a second request for a network address for the host, the second request including the particular qualifier.

26. An apparatus for managing leased network addresses for a plurality of networks using overlapping address spaces, comprising:

a means for storing a plurality of banks of addresses corresponding to the plurality of networks, wherein at least one particular set of one or more network addresses is included in more than one bank of the plurality of banks;

a means for receiving a request for a network address for a host on a first network of the plurality of networks from a relay agent on an intermediate device connected to the first network, the request including a qualifier associated with the first network by the relay agent;

a means for selecting, based on the qualifier, a first bank of addresses from the plurality of banks;

a means for identifying a first network address from the first bank of addresses based at least in part on the request; and

a means for sending to the relay agent a response for the host, the response indicating the first network address and the qualifier.

27. An apparatus for managing leased network addresses for a plurality of networks using overlapping address spaces, comprising:

a means for receiving, at a relay agent executing on an intermediate device connected to a first network of the plurality of networks, a first request for a network address from a host on the first network;

a means for associating a particular qualifier with the first network; and

a means for sending to a configuration server a second request for a network address for the host, the second request including the particular qualifier.

28. An apparatus for managing leased network addresses for a plurality of networks using overlapping address spaces, comprising:

a network interface that is coupled to one or more intermediate devices connected to the plurality of networks;

a processor; and

one or more stored sequences of instructions which, when executed by the processor, cause the processor to carry out the steps of:

storing a plurality of banks of addresses corresponding to the plurality of networks, wherein at least one particular set of one or more network addresses is included in more than one bank of the plurality of banks;

receiving a request for a network address for a host on a first network of the plurality of networks from a relay agent on an intermediate device connected to the first network, the request including a qualifier associated with the first network by the relay agent;

based on the qualifier, selecting a first bank of addresses from the plurality of banks;

identifying a first network address from the first bank of addresses based at least in part on the request; and

sending to the relay agent a response for the host, the response indicating the first network address and the qualifier.

29. An apparatus for managing leased network addresses for a plurality of networks using overlapping address spaces, comprising:

a first network interface that is coupled to a configuration server;

a second network interface that is coupled to a segment of a first network of the plurality of networks

a processor; and

one or more stored sequences of instructions which, when executed by the processor, cause the processor to carry out the steps of:

receiving, at a relay agent, a first request for a network address from a host on the first network;

associating a particular qualifier with the first network; and

sending to the configuration server a second request for a network address for the host, the second request including the particular qualifier.